

REMARKS

Status of Claims

Claims 1-3, 5-24, 26-34, and 36-44 are pending in the application. Claims 1-3, 5-17, 19-24, 26-34, and 36-44 are currently rejected. Claim 18 is allowed. Claims 1-3, 6-13, 17, 19-22, and 29-30 have been amended. Claims 4, 25, 31-47 have been cancelled. Claims 48-51 are newly added by this Amendment and Response.

In light of the amendments and remarks herein, reconsideration of claims 1-3, 5-24, 26-30 and 48-51 is respectfully requested.

Allowable Subject Matter

Applicants note with appreciation the Examiner's indication that claim 18 is allowed.

Amendments to the Claims

While Applicants believe that the previously presented claims are patentable over all of the art cited in the Office Action, as well as all other references submitted by Applicants, the claims have nonetheless been amended as follows in order to expedite the allowance of the claims. The amendments are, therefore, made without prejudice or disclaimer, and Applicants reserve the right to pursue the original scope of the claims as provided prior to the cancellation or amendment of the claims, such as through continuation practice.

Claim 1 is amended to recite, among other elements, radiation that has "at least one selected wavelength component corresponding to the absorption spectrum of an endogenous light acceptor" and that causes "a reduction in the number of pathogens within the oral cavity without application of an exogenous photosensitizer." Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 2 is amended to recite that a "light acceptor is located within the pathogens being irradiated." Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 3 is amended to recite that “a light acceptor is located within the tissue being irradiated.” Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 6 is amended to change the dependency of the claim from cancelled Claim 4 to Claim 1.

Claim 7 is amended to recite irradiating the area of tissue with a second selected wavelength component that causes a biostimulative effect from a group of such effects. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 8 is amended to recite irradiating the area of tissue with a second selected wavelength component that causes a biostimulative effect from a group of such effects. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 9 is amended to recite that the light acceptor is at least one light acceptor from the group of porphyrins, cytochromes, molecular oxygen, coproporphyrins, cytochroms, cytogen, cytochromoxidase, cytoporphyrin, protoporphyrin IX, and bilirubin. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 10 is amended to recite that the light acceptor is responsive to electromagnetic radiation other than visible light. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 11 is amended to recite, among other elements, that the radiation from the phototherapy applicator has at least one second selected wavelength component corresponding to the absorption spectrum of a second endogenous light acceptor. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 116 and generally 119-150.)

Claim 12 is amended to recite that the first endogenous light acceptor is a porphyrin and the second endogenous light acceptor is molecular oxygen. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

Claim 13 is amended to alter the dependency and conform the claim to the language of currently-amended claim 1.

Claim 17 is amended to recite a wavelength component in a range of about 0.28 microns to about 1.4 microns. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 133 and generally 119-150.)

Claim 19 is amended to conform the claim to the language of currently-amended claim 1.

Claim 20 is amended to recite, among other elements, irradiating blood flowing in vasculature of the oral cavity, the wavelength range being capable of being accepted by an endogenous light acceptor. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 147-149 and generally 119-150.)

Claim 21 is amended to recite, among other elements, irradiating the at least a portion of the tissue within the oral cavity with a second selected wavelength range being capable of being accepted by a second endogenous light acceptor. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 147-149 and generally 119-150.)

Claim 22 is amended to conform the claim to the language of currently-amended claim 20.

Claim 29 is amended to explicitly recite that pathogens include fungi. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 14, 111 and generally 119-150.)

Claim 30 is amended to recite that the light acceptor is at least one light acceptor from the group of bilirubin, porphyrins, cytochromes, molecular oxygen, coproporphyrins, cytochroms,

cytochrome, cytochromoxidase, cytoporphyrin, and protoporphyrin IX. Support for the amendment is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 111, 120, and generally 119-150.)

As such, the amendments to claims Claims 1-3, 6-13, 17, 19-22 and 29-30 do not add any new matter.

Newly-Added Claims

Claims 48-51 are newly added. Support for these claims is found throughout the specification, including the original claims as filed. (See, e.g., ¶¶ 120, 147-149 and generally 119-150.) Therefore, the newly added claims do not add any new matter.

Objections to the Specification

The Examiner objected to the specification on the grounds that it did not disclose the elements recited in claim 36. Claim 36 has been cancelled for reasons not associated with this objection. However, the cancellation of the claim should obviate the Examiner's objection to the specification.

Claim Rejections - 35 U.S.C. § 102

Claims 1-14, 16, 17, 20-22, 25-29, 40-42 and 44 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 6,056,548 to Neuberger et al. (herein "Neuberger"). Claims 4, 25, 40-42 and 44 are cancelled. The remaining claims, 1-3, 5-14, 16, 17, 20-22, and 26-29 are patentable, because Neuberger fails to disclose all of the elements recited in the claims.

For example, independent claim 1 as amended recites, among other things, irradiating an area of tissue with radiation having "one selected wavelength component corresponding to the absorption spectrum of an endogenous light acceptor" and further recites "a reduction in the number of pathogens within the oral cavity without application of an exogenous photosensitizer."

Similarly, Independent claim 20 recites irradiating at least a portion of tissue with radiation having a wavelength range “to irradiate blood flowing in vasculature of the oral cavity, the wavelength range being capable of being accepted by an endogenous light acceptor within the tissue.”

Neuberger does not disclose the elements of independent Claims 1 and 20. Neuberger discloses a method of treatment that utilizes an exogenous photosensitizer to destroy oral viruses and bacteria. (Neuberger Col. 1:18-24.) Neuberger does not disclose a mechanism to destroy oral viruses and bacteria using endogenous photosensitizers. In contrast, Applicants disclose a mechanism to kill pathogens, such as bacteria, fungi and viruses, using endogenous light acceptors, as claimed in Claim 1. (See, e.g., Application ¶¶ 111 and 120.) Applicants further disclose the elimination of such pathogens from the blood stream using endogenous light acceptors, as claimed in Claim 20. (See, e.g., Application ¶¶ 147-148.)

Claims 2-3, 5-14, 16-17, 21-22, and 26-29 are patentable for at least the reasons that Claims 1 and 20, from which each respectively depends, are patentable. Thus, Claims 1-3, 5-14, 16, 17, 20-22, and 26-29 are novel and patentable over Neuberger.

Claim Rejections - 35 U.S.C. § 103

Claims 31-39

Claims 31-39 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 6,699,040 to Hahn et al. in view of U.S. Patent 5,620, 478 to Eckhouse. Though Applicants do not agree with the Examiner’s basis for rejecting these claims, Applicants have cancelled Claims 31-39.

Claims 15, 23 and 24

Claims 15, 23 and 24 were rejected under 35 U.S.C. §103(a) as being unpatentable over Neuberger in view of U.S. Patent 6,026,828 to Altshuler (herein “Altshuler”). Claims 15, 23 and 24, however, are dependent from Claims 1 and 20 respectively. Thus, Claims 15, 23 and 24 are patentable for at least the same reasons that Claims 1 and 20 are patentable, as discussed above.

Claim 19

Claim 19 was rejected under 35 U.S.C. §103(a) as being as being unpatentable over Neuberger in view of U.S. Patent 6,135,774 to Hack et al. (herein "Hack"). Claim 19, however, is dependent from Claim 1. Thus, Claim 19 is patentable for at least the same reasons that Claim 1 is patentable, as discussed above.

Claims 30 and 43

Claims 30 and 43 were rejected under 35 U.S.C. §103(a) as being as being unpatentable over Neuberger in view of U.S. Patent 6,623,513 to Biel (herein "Biel"). Claim 30, however, is dependent from Claim 20. Thus, Claim 30 is patentable for at least the same reasons that Claim 20 is patentable, as discussed above. With respect to Claim 43, although Applicants do not agree with the Examiner's basis for rejecting these claims, Applicants have cancelled Claim 43.

New Claims 48-51

Claims 48 and 49 depend on independent claim 1, and claims 50 and 51 depend on independent claim 20. As discussed above, claims 1 and 20 are patentable. Hence, the newly added claims are patentable as well.

CONCLUSION

In summary, the above-identified patent application has been amended and reconsideration is respectfully requested for all the reasons set forth above. In the event that the amendments and remarks are not deemed to overcome the grounds for rejection, the Examiner is kindly requested to telephone the undersigned representative to discuss any remaining issues.

Respectfully submitted,

NUTTER McCLENNEN & FISH LLP

Dated: February 16, 2007

Respectfully submitted,

By: Electronic Signature: /Reza Mollaaghababa/
Reza Mollaaghababa
Registration No. 43,810
NUTTER McCLENNEN & FISH LLP
World Trade Center West
155 Seaport Boulevard
Boston, Massachusetts 02210-2604
(617) 439-2000
(617) 310-9000 (Fax)
Attorney for Applicant